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Pesticide Fact Sheet Number 62
Clipper (Paclobutrazol)

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16. Abstract (Limit: 200 words)

This document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on a specific pesticide or group of pesticides. A Fact Sheet is issued after one of the following actions has occurred.

1. Issuance or reissuance of a registration standard,
2. Issuance of each special review document,
3. Registration of a significantly changed use pattern,
4. Registration of a new chemical, or
5. An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

17. Document Analysis a. Descriptors
Pesticides, regulations, Chemical Information Fact Sheet, Use Patterns, Science Findings

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

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Office of Pesticide Programs (TS-766C)
Washington, DC 20460

EPA

Pesticide Fact Sheet

Name of Chemical: CLIPPER (PACLOBUTRAZOL)
Reason for Issuance:
Date Issued: August 14, 1985
Fact Sheet Number: 62

1. Description of chemical:

Common name: Paclobutrazol

Code name: PP333

Trade name: Clipper 50 WP

EPA Shaughnessy code: 125601

Chemical abstracts service (CAS) number: 76738-62-0

Year of initial registration: 1985

Pesticide type: Plant Growth Regulator

U.S. and foreign producers: ICI Americas Inc.

2. Use patterns and formulations:

Application sites: Ornamental trees (deciduous and broadleaf evergreen)

Types of formulations: Wettable powder (50% a.i.)

Types and methods of application: Applied in a pressurized tree injection system.

Application rates: Rates vary depending upon tree size: dosage for smallest treatable tree is 0.006 oz. active ingredient per tree.

Usual carriers: water

3. Science findings:

Summary science statement: The data base for paclobutrazol (non-food uses) is well developed. Results of acute inhalation (50% formulation) and eye irritation studies indicate toxicity category II. The chemical is non-mutagenic and is rapidly cleared from body tissue (rat and dog studies). Except for sandy soils, paclobutrazol does not exhibit a tendency to leach. The chemical does not photodegrade and is not expected to hydrolyze. Hazards to aquatic and terrestrial wildlife are not anticipated because of low toxicity and low risk of exposure (tree injection system).

Chemical characteristics:

Physical state:	Solid
Color:	White
Odor:	Not significant
Melting point:	165-166°C
Density:	1.22g/cm^3
Vapor pressure:	1.5×10^{-4} Pa at 50°C 8×10^{-6} Pa at 30°C 1×10^{-6} Pa at 20°C (by extrapolation)

Solubility:

Water	35 ppm
Cyclohexanone	18%
Methanol	15%
Acetone	11%
Methylene dichoride	10%
Xylene	6%
Propylene glycol	5%
Hexane	< 1%

Octanol/water partition coefficient: Log P 3.2

Unusual handling characteristics: None

Toxicology characteristics:

Acute toxicology results:

Technical

Acute oral toxicity (rat): 1.95 g/kg (male)
1.33 g/kg (female)
Toxicity category III

Acute dermal toxicity (rat): greater than 2g/kg
Toxicity category III

Primary skin irritation (rabbit): Paclobutrazol caused mild skin irritation. Toxicity category III

Primary eye irritation (rabbit): Paclobutrazol caused reversible corneal opacities with irritation lasting 72 hours. Toxicity category II

Dermal sensitization (guinea pig): Paclobutrazol is not a skin sensitizer.

Acute toxicology results:

50% Formulation
Acute inhalation toxicity (rat): greater than 766 mg/m^3 (male)
359-766 mg/m^3 (female)
Toxicity category II

Chronic toxicology results:

21-day dermal (rabbit): NOEL is 10 mg/kg/day
LEL is 100 mg/kg/day

90-day feeding (rat): NOEL is 250 ppm
LEL is 1,250 ppm

One year feeding (dog): NOEL is 15 mg/kg/day
LEL is 75 mg/kg/day

Teratology (rat): NOEL (maternal toxicity) is greater than 100 mg/kg/day (highest dose tested). NOEL (fetal effects) is 10 mg/kg/day.

Teratology (rabbit): Within limitations of study (low fertility), NOEL (maternal toxicity) is 25 mg/kg/day. LEL is 75 mg/kg/day.

Mutagenicity: Paclobutrazol does not cause mutagenic effects.

Metabolism: Results from rat and dog studies indicate that paclobutrazol and its metabolites are rapidly eliminated.

Major routes of exposure: Mixers, loaders and applicators would receive the most exposure via skin/eye contact and inhalation.

Physiological and biochemical behavioral characteristics:

Mechanism of pesticidal action: Paclobutrazol acts as a plant growth regulator and reduces regrowth in ornamental trees following trimming.

Environmental characteristics:

Adsorption and leaching in basic soil types: Paclobutrazol could leach in sandy soils with low organic content. In other soil types, the chemical does not have a high propensity to leach.

Loss from photodegradation: Paclobutrazol does not photodegrade after exposed to 10 days of simulated sunlight.

Resultant average persistance: Paclobutrazol degrades aerobically in soil with half-lives of about 1-7 months depending upon soil type. Paclobutrazol is not expected to hydrolyze in the environment.

Ecological characteristics:

Avian acute oral toxicity (Mallard): greater than 7,913 mg/kg

Avian dietary toxicity (Bobwhite quail): greater than 5,000 ppm

Avian dietary toxicity (Mallard): greater than 20,000 ppm

Fish acute toxicity (Bluegill): 23.6 mg/l

Fish acute toxicity (Rainbow trout): 27.8 mg/l

Aquatic invertebrate toxicity (Daphnia magna): 33.2 mg/l

Potential problems related to endangered species: Minimal hazard to endangered species is expected because of the low toxicity of paclobutrazol and proposed use (tree injection).

4. Summary of regulatory position and rationale:

Use classification: General

Use, formulation, manufacturing process or geographical restrictions: Paclobutrazol is not to be injected: (1) into trees that do not appear healthy, (2) into fruit or nut trees that will be harvested within one year after application and (3) into sugar maple or any other trees that are or could be tapped for sugar.

Unique label warning statements:

End-Use Product:

"Wear protective clothing, rubber gloves and a mask or pesticide respirator jointly approved by the Mining Enforcement and Safety Administration and the National Institute for Occupational Safety and Health."

5. Summary of major data gaps: None

6. Contact person at EPA:

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